

# Food security's role in sustaining rural viability in regions

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**Abstract.** Based on studying domestic and foreign experience, the research analyzes the state of rural social and production infrastructure, the activities of economic entities in the agro-industrial complex, the prospects for ensuring the viability of the territory, sustainable development, effectiveness of crop cultivation, food security components as a necessary condition for ensuring national security. Attention is emphasized on a serious obstacle to the preservation of the viability of territories - manifestations of persistence - technological backwardness of existing enterprises, the need to implement processes aimed at creating new industries - the results of research and innovation activities. The purpose of the paper is to interpret the phenomenon of “persistence” in relation to the viability of rural territories, in particular, to the ability of territories to ensure food security. The scientific novelty of the research is the substantiation of the necessity to take into account the phenomenon that characterizes the resistance to ensuring the viability of socio-economic systems that have undergone reforms, but maintain socio-economic parameters for a long time: when making any changes in the structure of the territory, “keeping in memory” its past patterns and returning to them under appropriate circumstances. We present a transformed view of the achieved degree of viability, taking into account the effect of persistence, based on the calculation of the degree of: economic stability, ecological balance, social equality, institutionalism and political system.

## 1 Introduction

Business entities in the agribusiness sector are considered vulnerable and face numerous constraints such as capital, labor, networks, infrastructure. Sustainable entrepreneurship has become extremely important as it can bring significant benefits to business entities, society and the environment. In order to ensure the viability of small-scale industries, due to their lower competitiveness, low sustainability of the state in market conditions compared to average and large-scale forms of economic entities, and consequently the high degree of need of small-scale forms in government support, efforts in the form of policy development, program development planning and institutional changes are necessary. Development of rural social infrastructure is a necessary condition for increasing the effectiveness and productivity of agricultural production. Food security of the state is a factor of national growth and development, which requires practical strategies to reduce or

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eliminate barriers to the realization of global food security. Regions that have achieved a high level of food security can become the largest suppliers of agricultural products in the state system of interregional supply and exchange. These regions, due to their established food potential, will have good prospects of entering the international agricultural market to realize their export function. Rural areas face food insecurity for various reasons, including rapid population growth, low agricultural productivity, lack of sustainable policies related to food security, macroeconomic instability and sharp fluctuations in agricultural prices. There is a need to improve social well-being because as the well-being of the population increases, the level of security increases.

Research describing the “longevity” or “survivability” of small-scale industries, economic entities with significantly limited resources compared to average and large-scale forms of economic management as integral components of “sustainability”, has demonstrated their long-term viability and resilience, which is achieved by improving the financial, social and environmental indicators of the territory's development. “Smallholder resilience” as a research direction in international writings has evolved from a simple phenomenon to a core concept aimed at achieving a new balance between ecosystems and people. Within this concept, all stakeholders must make significant efforts towards sustainability in order to achieve a common goal. Resilience in small industries means balancing needs and profits while protecting the environment and all relevant stakeholders. This is the international concept based on sustainable development principles applied to the small business sector.

In the formation of theoretical foundations and practical recommendations in the field of food security, publications of international organizations take an important place: United Nations (hereinafter - UN), Food and Agriculture Organization of the United Nations, World Bank, Organization for Economic Cooperation and Development.

The key economic guidelines for the functioning of small-scale farming abroad include fairness and economic benefit. Unequal distribution of profits among economic entities ultimately leads to social differentiation. Large and average forms of management have obvious advantages over small forms of management, which should be taken into account in the financial assistance to the agro-industrial complex from the state, in compliance with the principle of “fairness”: the most needy subjects of the agro-industrial complex should be provided with priority, proportionate financing. Among the characteristics inherent in all forms of economic management (small, average, large), three proved to be particularly sensitive to economic indicators in small agro-industrial enterprises: the number of small enterprises (competitors); state policy and market conditions. To succeed in this competition, to maintain themselves in not always predictable market conditions, economic entities of industries must prioritize innovation, consistency of production and economic effectiveness to achieve favorable profitability. Profitability reflects “the ability of an organization to generate profit from all available resources”. Small businesses must consider critical factors affecting their economic, social and environmental performance to achieve sustainability. Promoting cooperation, coordination, and synergy among all stakeholders and relevant institutions is critical to developing and implementing programs that effectively use and manage available resources [1].

In rural areas, the production structure should be considered in interrelation with the preservation of natural potential, ecological (environmental) component. Rural territories traditionally represent the most important centers of food security, which actualizes the improvement of conditions for the development of entrepreneurship in the territories with agro-specialization. A serious obstacle to the preservation of rural population, which does not allow to ensure the sustainability of development, is the technological backwardness of existing enterprises, which affects their natural potential. It is necessary to introduce processes aimed at creating new industries - the results of research and innovation

activities. The conceptual objective of rural development is to improve the quality of life of the rural population; the state and local authorities have the authority to realize this mission [2].

Food and security are essential for political stability and peace among people. Global crop yields and effectiveness have increased, especially in the last half century, but the need for food has increased dramatically due to accelerated global population growth. In this regard, no direct link is found between food production and food security. Topical issues for researchers are: elements and indicators of food security; components and dimensions of food security of highest priority; consequences of food insecurity; consequences of food insecurity of greater importance. At the 1975 World Food Conference, the United Nations defined food security as an adequate supply of staple foods worldwide and at all times; stabilization of consumption and compensation for fluctuations in production and prices. In 1983, FAO introduced a more general concept of food security, stating that everyone should have physical and economic access to staple foods at all times. This definition included three main components: food availability, access and utility. Later, another dimension called “stability” was added to food security. Financial and physical access to food refers to the equal distribution of available food using existing structures and resources. An assessment of agricultural production trends along with global population growth trends over the last half century shows that agricultural production has increased in proportion to population due to increases in crop area and production technology. Food security, which is a prerequisite for national security, is a major responsibility of government in all countries. Changes in agricultural land use and weakening of the agricultural sector are the main consequences of food insecurity in rural areas. Planning the implementation of territorial development strategies can both lead to agricultural development and ensure long-term food security [3].

Various problems identified in the process of regional development can be reflected in land use and solved through land use restructuring. Given that regions due to their location are different in terms of available areas of land suitable for agricultural activities and their quality, the organization of rational land use becomes particularly relevant due to the presence of spatial limitations in relation to land resources required for agricultural production. Thus, studying the trends and mechanisms of rural management contributes to understanding the spatial and temporal characteristics and evolutionary laws of regional economic management. Rural land use changes can help to promptly identify land use problems and provide a basis and reference point for rational development and precise regulation of rural land resources. Rural areas should adhere to the principle of integrated development, consider the development of centers at all levels as the driving force, and reasonably distribute the roles and responsibilities of towns and villages in different areas [4].

For an individual or household to be fully food secure, they must have sufficient, safe and nutritious food, and constant physical and economic access to it. Poverty is the main cause of food insecurity as unemployment or insufficient income makes it impossible to purchase the food needed. Most people who suffer from food insecurity are socially disadvantaged, living in low-income countries with high levels of poverty and inequality. Some researchers believe that hunger is not caused by a lack of food, but by the low purchasing power of the population.

Food security is determined by four elements: domestic economic policy conditions that create an insufficient supply of agricultural products to meet domestic demand for food; recurrent economic crises that worsen income levels, severely limiting access to food for large groups of the population; external factors, when the strongest economic agents implement strategies to manipulate agricultural markets, through which they are likely to deplete local markets; and external factors, when the most powerful economic agents

implement strategies to manipulate agricultural markets, through which they are likely to deplete local markets [5].

Note the importance of the environmental component of rural viability. Rural communities around the world face serious waste mismanagement practices (open dumping, open burning, dumping in rivers, plastic pollution) due to lack of or poor access to formal waste management systems, especially in low and average income countries. A certain proportion of the population does not have access to regular waste collection schemes in rural communities, in addition to poor water and sanitation infrastructure. Rural land is subject to urbanization and other agribusiness sector processes that damage organic farming, natural landscapes and local biodiversity. Rural localities face various threats related to climate change, natural hazards, natural environment pollution, food security, economic barriers. The environmental aspect includes several sectors, natural resources such as water, soil quality, fertilizers, energy consumption and distribution, methods used. Rural resilience research should respond to future and emerging social, economic and environmental challenges: cost-effective and innovative technologies in water, sanitation, energy, food [6].

Food is one of the most important needs for sustaining life. Indicators focused on food security may include food availability, access, utilization, stability of food security over time or some combination of these areas [7].

The term “sustainable development” (sustainable development) is closely related to increasing the effectiveness of the use of available resources; the use of advanced management practices; is an integrated agricultural system with the predominant use of information technology advances that contribute to the optimization of activities [8].

The problem of food security in rural areas is closely correlated with the need to provide food for the population, creating appropriate favorable conditions for residents. Sufficient food, and as a consequence, the increase in the standard of living of the rural population is positively reflected in the demographic situation [9].

“Food security” is the achieved state of socio-economic development, featured by ensuring the food independence of the territory, the population's access to food in the required quantity and assortment, not less than rational consumption norms. Food independence means the ability of the region of its self-sufficiency in agricultural products [10].

The region acts as a structural unit of the national territory is a part of the unified food market of the state. Systemic provision of food security is possible only in the framework of sustainable development of rural areas. Resource potential acts as a supporting link in the production process, the material basis for ensuring the effectiveness of the agrarian sector [11].

The term “persistence” is originally of biomedical origin, it has not been mentioned in the works of economists-managers in the agro-industrial complex; there are no sources characterizing the degree of study of this phenomenon in relation to sustainable development and food security.

## **2 Materials and methods**

The author introduces the term “persistence” (from Latin *persistere* - to persist), which characterizes the resistance to ensuring the viability of socio-economic systems that have undergone reforms, but maintain socio-economic parameters for a long time. Persistence (from English 'persisting') of a territory means “keeping in memory” its past patterns and returning to them under appropriate circumstances. Another interpretation of the term “persistence” (from English 'persistent') is the independence of processes in the territory, their autonomy from the generating volumetric environment.

Analytically, the degree of viability of the territory takes a classical form:

$$L_{sd} = \frac{(1 + L_{econ}) * (1 + L_{ecol}) * (1 + L_{soc})}{2^3}, \quad (1)$$

where:

$L_{sd}$  – site viability degree;

$L_{econ}$  – degree of economic stability;

$L_{ecol}$  – degree of ecological balance;

$L_{soc}$  – degree of social equality.

Manifestations of persistence are circumstances that negatively affect the viability of territories, for example: extensive technologies of economic management, imbalance in the economy and social sphere, lack of the necessary material and resource base.

### 3 Results and discussion

Analytically, the degree of viability of the territory taking into account the effect of persistence takes the following form:

$$L_{sd} = \frac{[(1 + L_{econ}) * (1 + L_{ecol}) * (1 + L_{soc}) * (1 + L_{inst}) * (1 + L_{pol})]}{2^5} * (1 - L_p), \quad (2)$$

here:

$L_{sd}$  – site viability degree;

$L_{econ}$  – degree of economic stability;

$L_{ecol}$  – degree of ecological balance;

$L_{soc}$  – degree of social equality;

$L_{inst}$  – degree of institutionalism;

$L_{pol}$  – degree of political system;

$L_p$  – persistence effect.

L values are aggregated, the area of their definition is the interval (0; 1). Degree of economic stability  $L_{econ}$  determined by the level of agricultural and industrial production; the degree of ecological balance  $L_{ecol}$  correlates with the state of pollution of the territory, measures for environmental protection; the degree of social equality  $L_{soc}$  depends on the state in the branches of the social sphere (“education”, “health care”, “social services”, etc.); the degree of institutionalism  $L_{inst}$  defines the level of development of democracy in the territory, trust in the authorities, political interest in the life of the country, voter turnout at elections; the degree of political system  $L_{pol}$  is formed on the basis of the potential of the territory, ethnic and confessional loyalty of the population.

### 4 Conclusions

Administrative activity of local self-government bodies implies their comprehensive impact on socio-economic processes taking place in the territory entrusted to them, and should lead to the achievement of food security. The viability of territories is the integration of five components of sustainable development: economic stability, social justice, ecological balance, institutionalism and the state of the political system. Achieved the purpose of the paper - interpretation of the phenomenon of “persistence” - resistance to ensure the viability

of socio-economic systems that have undergone reforms, but long-term preservation of socio-economic parameters. Prospects for ensuring the viability of the territory, achieving sustainable development of the territory are determined not only by the purposeful impact of management subjects, but also depend on the degree of “compatibility”, applicability of reforms to the territories. Food security is the achieved state of socio-economic development, featured by ensuring the food independence of the territory, the population's access to food. The term “persistence” is originally of biological and medical origin, it was not mentioned in the works of economists-managers in the field of agro-industrial complex; there are no sources characterizing the degree of study of this phenomenon in relation to ensuring sustainable development of territories, achieving food security of territories.

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